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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,170	12/05/2001	Ravishanker Krishnamoorthy	851663.431USPC	1979

7590

11/28/2005

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EXAMINER

TZENG, FRED

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,170

Applicant(s)

KRISHNAMOORTHY ET AL.

Examiner

Fred Tzeng

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5, 8-13, 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 6, 7 and 14 is/are rejected.
- 7) ☒ Claim(s) 15, 1619, 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in responsive to the RCE filed on August 18, 2005. Claims 1-20 are currently pending with claims 1, 3, 7, 8, 11 being amended and claims 15-20 added new.
2. The 35 U.S.C. 112 Rejection to claim 3 is withdrawn due to the amendment filed on August 18, 2005.

Response to Arguments

3. Applicant's arguments filed on August 18, 2005 have been fully considered but they are not persuasive.
4. In the remarks, applicant made one main point, "Claims 6, 7 and 14 are not anticipated by Wevers because Wevers does not disclose chopping of a connection to the spindle motor substantially synchronized out-of-phase with chopping of a connection to the positioning motor". This argument is not persuasive. Because chopping a connection is equivalent to disconnecting a connection. And Wevers clearly teaches chopping of a connection to the spindle motor substantially synchronized out-of-phase with chopping of a connection to the positioning motor by disclosing disabling the normal stepper motor control circuitry, 40-44, and leaving the spindle motor 27 connected to the spindle motor back EMF power source 54 (as admitted by applicant in remarks on page 10 lines 20-22 submitted on August 18, 2005).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 6, 7, 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wevers et al (USPN 4,679,102), hereafter as Wevers.

Regarding claim 6, Wevers discloses a method for controlling a disk drive having a spindle motor and a positioning motor both coupled to a driving circuit (see column 3 lines 10-31), comprising the steps of: detecting a loss of supply power to the deriving circuit (see column 3 line 32); chopping connection between the spindle motor and the driving circuit to generate an intermittent back-emf derived recirculating current (see column 3 lines 42-45); and chopping connection between the position motor and driving circuit at least substantially synchronized out-of-phase with the chopping of the spindle motor connection to enable driving of the positioning motor using the recirculating current (se column 3 lines 35-38, 42-53).

Regarding claim 7, Wevers discloses that a data storage device having a spindle motor for rotatably driving a spindle and/or disk (see column 3 lines 4-6), a positioning motor for positioning a read and/or write head (see column 3 lines 15-22), and a motor driving circuit coupled to controllably drive the spindle motor and positioning motor under normal operation using an external power supply (see column 3 lines 23-31 or figure 1A; i.e., items 40, 42, 44 and 46), the motor driving circuit including a controller

Art Unit: 2651

(see figure 1A; i.e., the items 40, 46, 44 and 54) adapted to respond to loss of external power supply by chopping connection between the driving circuit and the spindle and positioning motors respectfully in a substantially synchronized out-of-phase manner to enable driving of the positioning motor with a recirculation current derived from a back-emf of the spindle motor (see column 3 lines 23-53).

Regarding claim 14, Weavers discloses a motorized mechanism (see column 1 lines 7-13) comprising: a first motor (see column 3 lines 23-31 and figure 1A; i.e., the spindle motor 27); a second motor (see column 3 lines 23-31 and figure 1A; i.e., the stepper motor 30); a terminal for receiving external power (see figure 1A; item 48); and a controller coupled to the first motor, the second motor and the terminal for receiving external power and comprising a power rail, wherein the controller is configured in a first mode of operation to generate control signals to operate the first motor at a substantially constant speed and in a second mode of operation to extract power from the first motor for operating the second motor by generating control signals to chop connections between the power rail and first and second motors substantially in out-of-phase synchronization (see column 1 lines 65-68, column 2 lines 1-26 and column 3 lines 10-53; i.e., the derived spindle motor back EMF power source 54 of the first spindle motor 27 is connected while the second normal stepper motor 30 control circuitry being disconnected to power the stepper retract circuit for driving or retracting the head 10 to the nondata area).

Allowable Subject Matter

Art Unit: 2651

7. Claims 1-5, 11-13, 17 and 18 are allowable over the prior art of record because none of the prior art of record teaches or fairly suggests repeatedly connecting and disconnecting the spindle motor (the first motor) and the stepper motor (the second motor) to the driving circuit in substantially out-of-phase synchronism during a power failure.

8. Claims 8-10 are allowable over the prior art of record because none of the prior art of record teaches or fairly suggests a disk drive comprising a driving circuit for driving its spindle motor and stepper motor respectively, wherein the driving circuit including a storage capacitor for enabling transfer of BEMF energy from the spindle motor to the storage capacitor for powering VCM, and a voltage clamp for limiting the boosted storage capacitor voltage to protect other circuits from being damaged by a high voltage.

9. Claims 15, 16, 19, 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 15 and 16 are allowable over the prior art of record because none of the prior art of record teaches or fairly suggests a storage capacitor and a voltage clamp coupled to the power rail.

Claims 19 and 20 are allowable over the prior art of record because none of the prior art of record teaches or fairly suggests a storage capacitor and voltage clamp

Art Unit: 2651

coupled to the driving circuit and then maintaining an average positive current through the storage capacitor and the clamp circuit.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


13. Any inquiry concerning this communication from the examiner should be directed to Fred Tzeng whose telephone number is 571-272-7565. The examiner can normally be reached on weekdays from 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone numbers

Art Unit: 2651

for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-7565 for After Final communications.

14. Informal regarding the status of an application may be obtained from the Patent Application Information Retrieval (**PAIR**) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DAVID HUDSPETH
SUPERVISORY PATENT EXAMINE
TECHNOLOGY CENTER 2651

Fred F. Tzeng



November 21, 2005